

Applicant: William R. Bennett et al.
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REMARKS

Claims 1, 2, 5, 7, 12, 15, 16, 18 and 24 are being amended. Claim 28 is being cancelled. Claim 29 is being added. Claims 1-27 and 29 are now pending in the application. Reconsideration and reexamination of the application, as amended, are respectfully requested.

Claim 1 has been amended to recite that the anode cup has a closed upper end, an open lower end and a side wall extending between the upper and lower ends, incorporated from claim 2, which has been amended to delete those features. Claim 1 has been further amended to recite that the upper external diameter is a maximum diameter, the cup also includes an internal cup diameter measured at the lower end, the internal cup diameter is larger than the maximum upper external cup diameter, and a ratio of the maximum upper external diameter to the lower external diameter is greater than or equal to about 0.86. Claim 1 has also been voluntarily amended, not in response to any rejection, to better define the ratio recited in the last clause of the claim. Claim 1 now recites that the lower end has a terminal edge; the side wall comprises a step, an upper side wall above the step and a lower side wall below the step; and a ratio of a cup height from the terminal edge to an uppermost part of the step to a cup height from the terminal edge to a lower most part of the step is not greater than about 2.19. Bases for the amendments to claim 1 are found in the specification from page 6, line 21, to page 7, line 16, Table I and Fig. 1.

Claim 5 has been amended to recite that an internal diameter measured at the lower end of the anode cup is larger than a maximum external diameter measured above said step. Bases for this amendment are the same as those for the amendment to claim 1.

In claim 7, --the-- has been inserted before "cup corner radius" in line 12.

Claim 12 has been amended by replacing the originally recited features of the anode cup with a reference to the anode cup according to claim 1, so that claim 12 now depends from claim 1.

Claim 15 has been amended by reciting that the anode cup also comprises a rounded corner, having a radius, where the upper end and side wall meet. This provides antecedent basis for "cup corner radius" in claim 15. Basis for this amendment is found in original claim 12.

Claims 16 and 18 have been amended by inserting --first-- before the first occurrence of "vertical height" in claim 16, and by inserting --cathode-- before "can height" in line 12 of claim 18.

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Claim 18 has also been amended by replacing the originally recited features of the anode cup with a reference to the anode cup according to claim 1, so that claim 18 now depends from claim 1.

Claim 24 has been amended by rewriting it in dependent form, depending from claim 22.

The specification has been amended to correct several errors. In the paragraph beginning at the bottom of page 9, in line 21 "lower external diameter D" has been changed to --upper external diameter A-- to correspond to the definitions of reference symbols A and D on page 7, lines 6-11 of the application as filed. In the paragraph beginning at the bottom of page 10, on page 11, line 1, "cathode cup" has been changed to --anode cup--; bases are found on page 10, line 19, to page 11, line 1, of the application. In the paragraph beginning at the bottom of page 11, on line 20, "Table 2" has been changed to --Table I--, and on line 21, "upper can end" has been changed to --upper cup end--; bases are found on page 12, lines 4-5, and in Fig. 4, respectively.

In the Office action mailed on March 28, 2003, claims 1-23 were rejected. Claim 7 was rejected under 35 USC § 112, first paragraph, because the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with that claim. Claim 12 was rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-3, 5-9 and 11-21 were rejected under 35 USC § 102(b) as being anticipated by Bennett (U.S. Patent No. 5,846,672). Claims 4, 10 and 22-28 were rejected under 35 USC § 103(a) as being unpatentable over Bennett in view of Oltman et al. (U.S. Patent No. 5,567,538). Claims 7, 16 and 18 were objected to because of informalities.

Claims 7, 16 and 18 have been amended to correct the informalities. Claims 16 and 18 have been amended as suggested by the Examiner, by inserting --first-- before the first occurrence of "vertical height" in claim 16, and by inserting --cathode-- before "can height" in line 12 of claim 18. In claim 7, --the-- has been inserted before "cup corner radius" in line 12. It is not necessary to insert --the first as the Examiner suggested since there is only one cup corner radius recited in claim 7, and "cup corner radius" is not recited in any of the claims depending from claim 7.

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Applicants respectfully disagree with the rejection of claim 7 for lack of enablement and the rejection of claims 7-11 as anticipated by Bennett for the reasons given below. The rejection of claim 12 for being indefinite has been made moot by the above amendment. The rejection of claims 1-3, 5, 6 and 12-21 as anticipated by Bennett has been overcome by the above amendments to claims 1, 5, 12 and 18. The rejection of claims 22-28 as obvious over Bennett in view of Oltman et al. has been overcome by the above amendments of claims 18 and 24.

Claim 12 has been amended by replacing the originally recited anode cup features with a reference to the anode cup according to claim 1. The rejection of claim 12 as being indefinite is thereby made moot.

Claim 7, rejected for not providing enablement for the full scope of the claim, recites an anode cup for an electrochemical cell comprising an upper end and a lower open end and side walls extending between the upper and lower ends; a first internal cup diameter measured at the lower open end, and an external cup diameter measured at a point where a cup corner radius blends into the cup side wall; at least one step along said side walls, each such step defined by a first radius and a second radius along the side walls, wherein the first radius is toward the lower open end of the cup and the second radius is toward the upper end of the cup along the side walls; a second internal cup diameter measured at a point where the second radius blends into the cup side wall; a first vertical height measured from said lower end to the point where the cup corner radius blends into said cup side wall; and a second vertical height measured from said lower end to a point where the second radius of said step blends into the cup side wall. The first internal cup diameter exceeds the external cup diameter, the external cup diameter exceeds the second internal cup diameter, and the difference of said first vertical height minus said second vertical height is greater than zero.

The Examiner asserted that the specification does not enable "at least one step along said side wall" in line 7 of the claim. The Examiner has erroneously interpreted this as claiming a left-side and right side section of the same step, as shown in the cross-sectional drawing figures of the anode cup and the cell. Rather, "at least one step along the side wall" includes a cup with one step, as shown in Fig. 1, and a cup with an additional step, e.g., above the step defined by radii 6 and 7. It would be clear to the skilled artisan that additional steps can be formed in vertical portion of the can side wall in the same manner as the step shown in Fig. 1; i.e., by forming two additional radii,

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similar to radii 6 and 7, for each additional step. Therefore, "at least one step along the side wall" is enabled. For this reason, the rejection of claim 7 under 35 USC § 112, first paragraph, is traversed.

Claim 7 was also rejected as being anticipated by Bennett. However, claim 7 recites that the first internal cup diameter (dimension E in Fig. 1) exceeds the external cup diameter (dimension F in Fig. 1). This feature is not found in Bennett, thus the rejection of claim 7, and dependent claims 8-11, as anticipated by Bennett is traversed.

Claim 7 is also not obvious over Bennett because there is no suggestion or motivation to modify the anode cup disclosed by Bennett to arrive at the present invention. Bennett discloses a cell with a large internal volume and teaches that the internal volume is maximized when the average external diameter of the anode cup is essentially the same as the average external diameter of the cathode can (col. 3, lines 18-31). Therefore, Bennett teaches away from the present invention as recited in claim 7, wherein the first internal cup diameter, measured at the lower end of the cup, exceeds the external cup diameter, measured where the cup corner radius blends into the cup side wall.

Claim 1 has been amended to recite that the internal cup diameter, measured at the open end of the anode cup, is larger than the maximum upper external diameter. This feature is not found in Bennett, nor is it obvious, for the same reasons as given above regarding the first internal cup diameter exceeding the external cup diameter in claim 7. The rejection of claims 1-3 as anticipated by Bennett has been overcome by the above amendment of claim 1.

Claim 5 has been amended to recite that an internal diameter measured at the lower end of the anode cup is larger than a maximum external diameter measured above said step. Amended claim 5 is not anticipated by or obvious over Bennett for the same reasons given above regarding amended claims 1 and 7, and the rejection of claims 5 and 6 has been overcome by the above amendment of claim 1.

Claims 12 and 18 have been amended to depend from claim 1, and claim 1 has been amended to distinguish over Bennett. Therefore, the rejection of claims 12-21 as anticipated by Bennett, as well as the rejection of claims 22 and 23 as obvious over Bennett in view of Oltman et al., has been overcome by the above amendments to claims 1, 12 and 18.

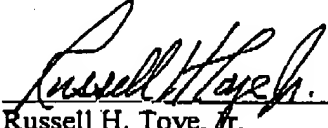
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Claim 24 has been amended to depend from claim 22, which now contains all of the limitations of amended claim 1, thereby overcoming the rejection of claims 24-27 as being obvious over Bennett in view of Oltman et al.

For the above reasons, it is believed that claims 1-27 and 29 are in condition for allowance. Withdrawal of the rejections and allowance of the application as amended are requested.

Respectfully submitted,

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